

REMARKS

Claims 138-183 are pending in the application, with claims 138, 146, 153, 160, 166 and 175 being independent. Claims 166-183 have been added.

The title has been amended to better describe the claimed invention. No new matter has been added.

Claims 138-143, 145-150, 152-157 and 159 have been rejected as being obvious over Yamazaki in view of Yanagawa. Independent claim 138 recites a liquid crystal display device that includes, among other elements, a common electrode having a function of a black matrix over a first interlayer insulating film, a second interlayer insulating film over the common electrode, a pixel line and at least one pixel electrode both formed over the second interlayer insulating film, and a liquid crystal layer over the pixel line and the pixel electrode. Claim 138 further recites that the liquid crystal layer is driven by an electric field formed between the pixel electrode and the common electrode, with the electric field having a component parallel with a substrate that underlies the first interlayer insulating film, and that a storage capacitor is formed between the pixel line and the black matrix. Independent claim 153 recites a similar arrangement in which the first interlayer insulating film comprises an organic resin.

As noted by the Examiner, Yamazaki fails to describe or suggest driving the liquid crystal layer using an electric field formed between the pixel electrode and the common electrode, with the electric field having a component parallel with a substrate that underlies the first interlayer insulating film. Instead, Yamazaki notes that the liquid crystal is sandwiched between the pixel electrode and a counter electrode, and that the liquid crystal is driven by an electric field formed between the pixel and counter electrodes. See Yamazaki at col. 1, lines 21-28. This electric field would be generally perpendicular to the substrate.

Recognizing this failure of Yamazaki, the Examiner points to Yanagawa as describing an in-plane switching type liquid crystal display device where the liquid crystal layer is driven by a parallel electric field formed between the display electrode and a reference electrode. The Examiner then argues that one of ordinary skill in the art would have been motivated to replace Yamazaki's liquid crystal driving arrangement with that of Yanagawa because Yanagawa

indicates that the in-plane switching arrangement allows the viewer to recognize a clear image over a wide visual field angle relative to the display.

Applicant respectfully disagrees and requests reconsideration and withdrawal of the rejection of claims 138 and 153 and their dependent claims because one of ordinary skill in the art would not have been led by Yanagawa's mere recitation of the existence and benefits of in-plane switching arrangements to modify Yamazaki's system to drive the liquid crystal layer using an electric field formed between the pixel electrode and the common electrode (which also serves as the black matrix), with the electric field having a component parallel with the substrate. In particular, as neither Yamazaki nor Yanagawa recognized that the black matrix could also be used as a common electrode for driving the liquid crystal layer, a combination of Yamazaki and Yanagawa would not result in the claimed arrangement for driving the liquid crystal layer.

Yamazaki describes a system in which the pixel electrode 205 covers the entire pixel region and overlaps the black matrix 204. This arrangement makes it particularly easy to include a region such as the region 206 in which the overlap of the pixel electrode 205 with the black matrix 204 forms a retaining capacitor. However, this arrangement would be inoperable for a system in which the liquid crystal layer is driven by an electric field formed between the pixel electrode and the black matrix 204, because the electric field generally would not extend above the pixel electrode in the pixel region. Accordingly, in order to employ Yanagawa's arrangement in Yamazaki's system, the electrode arrangement of Yamazaki would need to be replaced with the electrode arrangement of Yanagawa. However, instead of using the black matrix as the common electrode, Yanagawa uses a reference electrode positioned within the pixel region as a common electrode. Accordingly, the combination of Yamazaki and Yanagawa would not result in the driving arrangement recited in the claims.

In response to similar previous arguments, the Examiner states that Yamazaki discloses at col. 3, lines 15-18 that the black matrix film may also act to form an electrode. While this is true, Yamazaki merely states that the black matrix film may be used as an electrode for a retaining capacitor and nowhere states that the black matrix film may be used as an electrode for driving the liquid crystal. Accordingly, this statement in Yamazaki would not have led one of

ordinary skill in the art to use the black matrix as the common electrode for driving the liquid crystal.

Claims 144, 151 and 158 have been rejected as being obvious over Yamazaki in view of Yanagawa and further in view of Yamazaki '834. Applicant requests reconsideration and withdrawal of this rejection because Yamazaki '834 does not remedy the failure of Yamazaki and Yanagawa to describe or suggest the subject matter of independent claims 138 and 153.

Claims 160-163 and 165 have been rejected as being obvious over Yamazaki in view of Yanagawa and further in view of Kenichi. Independent claim 160 recites an arrangement similar to that of claim 138 in which the second interlayer insulating film includes at least a first layer comprising an organic resin material and a second layer comprising an inorganic material. As Kenichi does not remedy the failure of Yamazaki and Yanagawa to describe or suggest the liquid crystal driving arrangement of claim 160, applicant requests reconsideration and withdrawal of this rejection for the reasons discussed above with respect to claim 138.

Claim 164 has been rejected as being obvious over Yamazaki in view of Yanagawa and Kenichi and further in view of Yamazaki '834. Applicant requests reconsideration and withdrawal of this rejection because, as noted above, Yamazaki '834 does not remedy the failure of Yamazaki and Yanagawa to describe or suggest the subject matter of the independent claims.

Please charge Deposit Account No. 06-1050 in the amount of \$950 for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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